

CLAIMS

1. Device for transmitting digital signals from a first unit to a second unit, the first
5 unit comprising:
- a data transmitter for emitting the digital signals;
 - a pseudo random-generator or a random generator for generating pseudo
random values or random values, respectively, and
 - a combining unit for combining the signals emitted by the data transmitter
10 with the pseudo random values or the random values;
- and the second unit comprising:
- a data receiver connected to the data transmitter by a transmission path,
for receiving the digital signals;
- wherein
- 15 a control unit is provided for controlling the combining unit in such manner that
pseudo random data or random data are transmitted during intervals between
periods for transmitting information data.
2. Device according to claim 1, wherein a signaling line is provided between the
20 data transmitter and the data receiver, via which the data transmitter signalizes
the presence of information data, or pseudo random data, or random data to the
data receiver.
3. Device according to claim 1, wherein the data receiver has a signaling
25 means for requesting information data from the data transmitter; and the data
transmitter is adapted to send information data or pseudo random data or random
data in response to this signal.
4. Device according to claim 1, wherein the combining unit is adapted to
30 continuously combine information signals to be transmitted with signals of the
pseudo random generator, and a second combining unit is provided in the second
unit for also combining received signals with pseudo random data.

5. Device according to claim 4, wherein an additional transmission path for transmitting the pseudo random data is provided, so that at the second unit a combination with the pseudo random data can take place synchronously with a combining with the pseudo random data at the first unit.

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6. Device according to claim 1, wherein the second unit comprises a second pseudo random-generator for generating pseudo random numbers of a same sequence as the pseudo random generator of the first unit.

10 7. Device according to claim 6, wherein an additional transmission path is provided for synchronizing the pseudo random generator of the first unit and the pseudo random generator of the second unit.

15 8. Device according to claim 6, further comprising a unit for synchronizing the pseudo random generators of the first unit and the second unit.

20 9. Device according to claim 8, wherein the unit for synchronizing the pseudo random generators of the first unit is designed so that at a beginning of each single signal transmission a synchronization sequence is started which makes possible a synchronization of the pseudo random generators of the first unit and the second unit.

25 10. Device according to claim 9, wherein for the synchronization sequence, the data transmitter is adapted to emit a previously established bit pattern which is then combined with pseudo random values of the pseudo random generator of the first unit by the combining unit connected on an output side of the pseudo random generator; and a control unit of the data receiver is adapted to perform at various times a synchronization of the pseudo random generator of the second unit with the received data until a known given transmission pattern occurs as a result of
30 the combination.

11. Device according to claim 10, wherein for simplified synchronization between the data transmitter and the data receiver, a short pseudo random sequence is used at first, and after a given period of time, or after a synchronization with this random sequence, a switch-over is made to a longer pseudo random sequence.

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12. Method for transmitting digital signals between a plurality of units of which at least one first unit comprises a data transmitter and at least one second unit comprises a data receiver, and the at least one first unit is connected by at least one transmission path to the at least one second unit;

10 wherein true or pseudo random data are inserted between information data, so that in a spectrum of a signal to be transmitted, gaps between spectral lines are substantially reduced, so that amplitudes of the spectral lines fall off, however without an entire bandwidth needed for transmission being substantially increased.

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13. Method for transmitting digital signals between a first unit comprising a data transmitter, and a second unit comprising a data receiver, the data transmitter and the data receiver being joined by a transmission path, the method comprising the steps of:

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- emitting digital information signals with the data transmitter;
- generating pseudo random values or random values with a pseudo random generator or a random generator;
- encoding the digital information signals by combining the signals with the generated pseudo random values or random values; and
- 25 - receiving the encoded digital signals with the data receiver;

wherein the method includes the further step of:

- inserting true random data or pseudo random data in intervals between information data.

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